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Interregional differences in taxes and population mobility

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Abstract

Belgium is a federal state where regional fiscal competences have been increasing. In particular, the regions are now able to increase or to lower the personal income tax burden of their residents via positive and negative surcharges. Should the regions adopt the possibilities opened by the Law, would it influence interregional mobility?

It is not possible to assert directly this question. However, indirect evidence of the impact of fiscal disparities on mobility can be found by analysing the mobility between municipalities. Indeed, for long, the real estate income tax and the local surcharges on the federal personal income tax have not been uniform on the Belgian territory. We tried to quantify whether those tax differences generated population moves from the more expensive municipalities to the less expensive ones.

The attractiveness of the municipalities measured by means of their intra Belgium migration balance has been explained by local wealth, employment rate, quality of the local administration, proximity to the coast, three indexes constructed by a factor analysis based on a satisfaction survey, housing prices and local taxation.

Our estimations showed that local tax level has no significant impact on the local migration balance. Is this observation transposable at the regional level? On one side, the answer to this question depends on the level of disparities in tax rates that such a practice would introduce. On the other side, if disparities in regional tax were to appear, interregional mobility would be slowed down by the impact of the interregional cultural differences.

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1 Introduction

As other federal states, Belgium has experienced a decentralisation of competences towards regional areas for several decades. As a result, interregional differences in tax rates have appeared. In particular, the regions are now able to increase or to lower the personal income tax burden of their residents via positive and negative surcharges.[2] In this context, a question is worth to be asked: would interregional differences in personal income tax rate have an impact on the mobility of the population?[3]

Even though the Flemish region did use the possibilities opened by the legislation in 1999, it did so only as a temporary measure. As a consequence, it is not possible to answer this question directly. However, indirect evidence of the impact of fiscal disparities on mobility in Belgium can be found by analysing the willingness to move between municipalities. Indeed, for a long time, two specific taxes have not been uniform on the Belgian territory. The real estate income tax, which differs among municipalities[4] and additionally, the federal personal income tax surcharges that municipalities freely set locally.

In this paper, our aim is to determine whether those differences in tax burden did have any impact on the intra Belgium moving. There is no survey of the population that records the motivations of moving. But, getting indirect evidence of the impact of taxation on mobility is possible by analysing the evolution of municipal population. Did populations in municipalities with low taxes grow more than in municipalities with high tax burdens? Of course, the tax level is only one of the potential determinants of location, as people tend to locate in places that suit them best. To isolate the impact of taxes on residential mobility, we have to control for other local costs such as the price of housing and for the factors that make a municipality more or less attractive.

The paper is organized as follows. Section II presents a brief overview of intermunicipal mobility in Belgium and introduces our dependent variable. In section III, we set out the

[2] 'Loi spéciale de financement du 16 janvier 1989' modified by the 'Loi spéciale de financement du 13 juillet 2001'.

[3] Indeed, as a part of the literature about the fiscal federalism has shown, people tend to choose their preferred combination of public goods and taxes. This can lead to fiscal competition and population moves (Tiebout (1956), Oates (1972), Pines and Thisse (1995) in Brueckner (2004)).

factors that can potentially influence the relative attractiveness of municipalities and introduce the selected explanatory variables. Section IV describes the method followed in order to assess the impact of local tax differences and other relevant variables on the residential mobility. Finally, section V presents the most significant results before concluding. The analysis is based on the period 1990-1998, which has registered stable local tax disparities.

2 Residential mobility in Belgium: the figures

Intermunicipal mobility in Belgium is important as yearly 4.20 % of the population moved from one municipality to another during the period 1990-1998.

Table 1: Average annual number of migrant people between Belgian municipalities (1990-1998), as a % of the total population

In the whole country	4.20%
Within the same region	3.60%
Between the regions	0.60%

Source: National Institute for Statistics

We choose to measure the attractiveness of the municipalities by means of their intra Belgian migration balance. The migration balance has been considered relative to the population size of the municipality as population size can strongly differ from one municipality to another one in Belgium.

Those balances differed significantly within the municipalities. The important negative balances of most municipalities in the Brussels region can already be noticed.

Table 2: Balance of the Belgian municipal migrations on the period 1990-1998, % of the population of the municipality, average on the country and the regions

	Average	Minimum	Maximum
Belgium	**2.64%**	-22.91%	21.88%
Flemish Region	**2.30%**	-12.26%	13.85%
Walloon Region	**3.76%**	-8.72%	21.88%
Brussels Region	**-7.32%**	-22.91%	3.33%

[4] Its rate is determined at three different levels: regional, provincial and municipal.

Source: National Institute for Statistics

3 Why are some locations more attractive?

Our analysis is based on the evolution of the municipal migrants balance. This means that only municipal characteristics that make the municipality attractive can be considered. Personal relocation incentives such as the proximity to family and friends, lifecycle position (wedding, birth of children) or education level cannot be taken into account.

Residential location is the result of a trade-off between the cost of relocation and the advantages that it can bring. In this section, we try to identify from the literature the elements that increase or decrease the attractiveness of a specific location.

3.1 Some advantages

First, differences in regional economic activities can lead to different employment rates and levels of income per capita. Generally, migrants are attracted by areas with high income and flee those with low income.[5] So, the stronger the disparities of income among municipalities, the bigger the population movements. In Canada, for example, regional wealth differences are considered as one of the most important incentives to mobility.[6] In Belgium, even if economic policy is mainly determined at the regional level, intraregional variations in wealth and economic activity exist. Secondly, job opportunities could encourage intermunicipal mobility. However the exiguity of the Belgian territory and the very intense network of roads and railways may limit this impact, as in fact commuting is a phenomenon worth mentioning in Belgium (Caruso, 2003, p.15).

The economic environment is not the only determinant of the local quality of life. The urban location has two obvious advantages: reduced commuting costs and an increased accessibility to public and private facilities (swimming pools, restaurants, theatres…),

[5] Although, the attraction of rich regions is stronger than the 'push' effect of the poor regions. Indeed, poor people have less financial resources to move.
[6] See Courchene (1970) and Vanderkamp (1973).

(BFP, 2002). Brueckner et al. (1999) distinguish three categories of urban amenities: natural amenities, historical amenities and modern amenities. The first two refer respectively to topographical features (rivers, coastline…) and infrastructure from past eras (monuments…). These are exogenous. Modern amenities depend in particular on local income levels. A city with high natural and historical amenities (such as Paris) will be more attractive. However, the natural and historical urban amenities' attractiveness declines strongly with the distance from the centre.

But the recent phenomenon of urban spreading has led to pollution problems, road congestion, lack of parking places, etc… Housing prices have also increased. These aspects reduce the attractiveness of the city. Theoretically, it is difficult to determine if the urban areas are currently more attractive than other areas. Some studies[7] show that, as far as rich people are concerned, two opposite forces play a role: rich people have a high housing consumption that is easier to satisfy in the suburbs, but they also want to reduce their commuting time.

In Belgium, some studies[8] have shown that young people (18-24 years) in search of job or formation tend to live into urban areas. They offer them more job opportunities and gather universities and high schools. After wedding or the birth of children, families tend to move from urban areas to the countryside in search of a roomier housing and a better life environment. On the opposite some older people want to go back to the city. The net impact on the urban balance is thus a priori unclear.

The potential explanatory variables were included accordingly to their availability.[9]

Local wealth has been measured by per capita personal income in the municipality.

The attractiveness of the municipality has been measured by the employment rate, measured by the share of the working population in the total active population, an index of the quality of the local administration, the proximity to the coast and three factors

[7] Alonso (1964), Mills (1967), Muth (1969) in Brueckner et al. (1999).
[8] Savenberg and Van Hecke (1998), Eggerickx et al. (2002), BFP (2004).
[9] Appendix 1 mentions the data sources and gives a summary statistic for each of them.

constructed by factor analysis with varimax rotation. These factors are based on a socio-economic survey carried out in 2001 by the National Institute for Statistics (INS).

The INS questions intended to measure the satisfaction of households about the quality of their neighbourhood: calm, air quality, cleanliness, store proximity, quality of roads, transport infrastructure, health services… The INS survey led to satisfaction indexes, for each aspect and for each municipality. These indexes constituted, according to us, important information about the valuation of the amenities and quality of the living environment. To ease their interpretation we carried out a factor analysis in order to identify some common dimensions to these many indexes. Three factors were retained.

Table 3: Factors retained by the factor analysis

	Rotated Factor Loadings (varimax rotation)			
Quality of	**Factor 1**	**Factor 2**	**Factor 3**	Uniqueness
Professions services	**0.89**	0.31	0.03	0.11
Shopping facilities	**0.87**	0.20	-0.25	0.14
Health services	**0.80**	0.29	-0.06	0.27
Transport facilities	**0.63**	0.24	-0.44	0.35
Roads	0.32	**0.84**	0.21	0.14
Cycle tracks	0.30	**0.81**	0.16	0.24
Pavements	0.44	**0.64**	-0.30	0.31
Buildings (attractiveness)	-0.02	0.04	**0.96**	0.07
Cleanness	0.00	0.21	**0.94**	0.08
Air	-0.28	-0.13	**0.85**	0.19
Calm	-0.34	0.01	**0.84**	0.17
Open space	0.04	0.13	**0.78**	0.36

Source: Own calculations based on National Institute For Statistics (INS), socio economic survey of 2001

The three relevant factors reflect three particular characteristics of location that seem relevant for our analysis: private facilities (factor 1), roadway quality (factor 2) and the charm of the environment (factor 3). Indeed, factor 1 mainly accounts for the availability and quality of professions, of shopping facilities, of health services and of transport facilities. Factor 2 is related to the quality of roads, of cycle tracks and of pavements… Finally, factor 3 gathers all the characteristics of a charming environment: attractiveness of the buildings, cleanness, pure air, calm and open space.

3.2 Prices of housing

It is evident that *ceteris paribus*, households will prefer to locate where housing is cheaper. However, there is a possible trade-off between housing prices and taxes as taxes can be integrated in the prices of housing (Goodspeed, 1998). A higher price can be compensated by a lower taxation so that the impact on mobility can be unclear. The Goodspeed results apply in the case of the Flemish Region where the fiscal burden is the lowest in the country (see 3.3 below), and where the real prices are higher than the national average, but not in the Brussels Region that shows simultaneously high taxes and high housing prices.

Table 4 : Real prices of houses in 1997, (Belgium = 100)

	Average	Minimum	Maximum
Belgium	**100.0**	100.0	100.0
Flemish Region	**106.5**	131.0	93.8
Walloon Region	**88.7**	100.0	100.0
Brussels Region	**149.7**	246.0	97.9

Source : 'CGER : Guide des valeurs immobilières', Crew

Additionally, in Belgium, high housing prices are related to low unemployment rates (Caruso, 2003).

3.3 The role of taxes

A part of the literature about fiscal decentralisation has shown that people tend to choose to live where the combination of public goods and taxes is the most advantageous. This can lead to tax competition between places and population moves,[10] as local authorities try to reduce taxes under the constraint of a given supply of public good in order to attract the tax base. Some authors[11] have shown that decentralisation of redistribution leads to some problems as well, as rich people flee the areas with high redistribution taxes, although poorer people try to locate in these ones. This induces an under optimal repartition of the population in space and an under financing of the redistribution.

[10] Tiebout (1956), Oates (1972), Pines and Thisse (1995) in Brueckner (2004).

As mentioned before, two taxes vary locally in Belgium, namely the real estate income tax (REIT) and the local surcharge on the Personal Income Tax (PIT).

Expression (1) provides a compound rate for those taxes at the municipality level:

$$\frac{(\text{surcharge on P.I.T} * \text{total P.I.T}) + (\text{REIT rate} * \text{local real estate income})}{\text{total personal income}} \quad (1)$$

Table 5 shows the dispersion of the local tax rate.

Table 5: Tax burden in the Belgian municipalities (% of the total personal income), average on the country and the regions

Tax burden in 1990	Average	Minimum	Maximum	Standard deviation
Belgium	**2.8%**	**1.3%**	**11.8%**	**0.8%**
Flemish Region	2.5%	1.4%	5.0%	0.5%
Walloon Region	3.0%	1.3%	11.8%	0.8%
Brussels Region	4.2%	3.1%	7.5%	1.0%

Source: Actualités fiscales, ced-Samson

4 Methodology

Two problems had to be addressed before estimating the impact of the exogenous variables on the local population balance. Two variables are likely endogenous: the local tax rate and the prices of housing.

Indeed, the local tax rate could be related with the migration balance in two ways. First a positive balance implies a higher tax base and could induce the municipality to lower its tax rate, but on the opposite a higher population means a higher need for public local services what could induce municipalities to increase their rate. In practice it appears that during the analysed period rates moved very little (they increased in average of 0.26 percentage points) and that changes were not related with the migration balance (See annex 2 for more details). This analysis enables us to conclude that there is no obvious endogeneity in this case.

[11] Brown and Oates (1987) in Figuieres and al (2004), Guihéry (2002, résumé de thèse).

Prices of housing are clearly related with the migration balance because a high positive balance means a pressure of demand. For this reason, we opted for a 2-stage-least-squares method with the urbanization level[12] as instrument.

5 Results

Table 6: Estimation of the impact of the local tax rate and other relevant variables on the migration balances of the municipalities (1990-1998)*

	Coefficient	Std. Err.	t	P < |t|
Constant	-39.70	6.43	-6.18	0.00
Local per capita income	0.05	0.01	8.71	0.00
Employment	0.30	0.07	4.47	0.00
Quality of administration	0.14	0.03	5.26	0.00
Beach	6.49	1.74	3.73	0.00
Privates services quality (factor 1)	-2.23	0.29	-7.68	0.00
Road quality (factor 2)	-1.97	0.31	-6.44	0.00
Charming environment (factor 3)	1.11	0.25	4.38	0.00
Housing price	-0.006	0.00	-5.93	0.00
Local tax rate	**-0.05**	**0.33**	**-0.16**	**0.88**

* TSLS ; n=589; instrumented variable: Housing price; Instrument: urbanization level

The results shown in this table meet, to some extent, the intuitions and observations recorded in the literature. First, wealth and job opportunities clearly increase the attractiveness of a municipality. The coefficients of the local per capita income and employment are actually positive and significant. Economic disparities within Belgian municipalities therefore led to population movements towards the wealthiest ones.

Three others local characteristics significantly increase the attractiveness of the municipalities: the quality of the local administration (including post office, police and population services), the proximity of the beach and a charming environment.

Surprisingly, the quality of the private services (such as professions, shopping facilities, health services…) and the quality of the roadway have a negative (and significant) impact on migration balances. Those characteristics are typical advantages of an urban environment. In our view, the negative observed relation is just a reflection of the

[12] This urbanization index is the percentage of land occupied by buildings, roads and ways, parks and

exodus phenomenon from the cities and particularly from Brussels. It is worth noticing than even after controlling for population density, those two variables kept their highly significant negative impact on the migration balance.

Switching to the impact of the cost factors, we observe as expected a negative influence of housing prices.

Turning to the relation between the local tax burden and municipality attractiveness, we find a negative, but non-significant impact. So far, we cannot claim that disparities in local taxes have been an incentive to relocate.[13]

It can be shown that there is a negative correlation between the local tax burden and per capita income (See annex 3). As a consequence, if we omit to consider the wealth indicator within the list of explanatory variables, a significant and negative relation appears between the local tax level and the attractiveness of the municipality (see annex 3). People tend to relocate to richer municipalities and at the same time to a more favourable tax system. Our estimations indicate however that the former effect has a higher explanatory power.

6 Conclusions

Did differences in tax burden have an impact on the intra Belgium movements? Currently, there is no survey of the population that records the motivations for moving. We therefore tried to get indirect evidence of the impact of taxation on mobility by analysing the evolution of municipal migration balances, taken as indicator of attractiveness of the municipalities.

Our estimations show that local tax level has no significant impact on the local migration balance. Is this observation transposable at the regional level? Should the

gardens.

[13] Our observations confirm the results of Heyndels (1990) about the impact of differences in local taxes on population movements between neighbouring municipalities.

regions apply rebates or surcharges on the federal personal income tax of its residents, would this not influence interregional mobility?

On one side, the answer to this question depends on the level of disparities in tax rates that such a practice would introduce. Currently, we know that local tax variations have no impact on mobility. But local taxes, although they have a big variance, remain at a relatively low level when compared to the federal taxation (2.7% of the local taxable income against a marginal federal rate of 55%).

On the other side, if disparities in regional tax were to appear, interregional mobility would be slowed down by the impact of the interregional cultural differences. Till now interregional delocalisation is very small. Only 0.6% of the population yearly crossed the regional border during the period 1990-1998 (see table1). Poulain and al (2000) showed that linguistic and cultural differences between the Flemish and Walloon regions restrain interregional migration to a large extent. This ‘border effect’ also increases with time.

7 Appendix

7.1 Appendix 1: Data sources and values

Table 7: Data sources and level of observation

	Sources	**Level of observation**
Migration balance	National Institute for Statistics	Municipality
Local per capita income	National Institute for Statistics : Financial Statistics	Municipality
Employment	National Institute for Statistics : Regional Statistics	District
Quality of administration	National Institute for Statistics : Socio economic Survey 2001	Municipality
Beach	Crew calculations	Municipality
Privates services quality	Crew Calculations based on : INS, Socio economic Survey 2001	Municipality
Road quality	Crew Calculations based on : INS, Socio economic Survey 2001	Municipality
Charming environment	Crew Calculations based on : INS, Socio economic Survey 2001	Municipality
Housing price	Fortis Bank : Guide of property values	District
Local tax rate	Owned Calculations based on : National Institute for Statistics "Actualités fiscales" ced-Samson	Municipality

Table 8: Data values

	Average	Minimum	Maximum
Migration balance (%)	2.64	-22.92	21.88
Local per capita income (*1000 BEF)	394.80	192.10	593.20
Employment (%)	83.22	67.10	92.80
Quality of administration	97.98	67.00	132.40
Beach		0 if not at the coast	1 if at the coast
Privates services quality (factor 1)	0.00	-5.85	2.76
Road quality (factor 2)	0.00	-2.65	2.81
Charming environment (factor 3)	0.00	-4.11	2.52
Housing price (*1000 BEF)	2,903.140	1,767.00	4,438.00
Local tax rate (%)	**2.76**	**1.30**	**11.80**

N=589

7.2 Appendix 2: Is the local tax rate endogenous?

Local tax rates changed only slightly during the period of observations, as it appears in the following table. They gained 0.26 percentage points in average with a slope coefficient not significantly different from 1.

Table 9 : Estimated relation between the local taxation in 1997 and in 1990

	Coefficient	Std. Err.	t	P < |t|
Constant	0.26	0.04	6.02	0
Local tax rate in 1990	0.10	0.02	65.93	0.00

n=589, R2 = 0.88

It appears that there is no significant relation between the increase in the local tax burden and the migration balance, as shown in the table below.

Table 10: Estimated relation between an increase in the local tax burden and a positive migration balance

	Coefficient	Std. Err.	t	P < |t|
Constant	0.25	0.02	11.22	0.00
Migration balance	0.01	0.00	1.33	0.18

n=447, R2 = 0.004

7.3 Appendix 3 : The impact of ignoring the per capita income

The local tax rate and the per capita income are significantly negatively related.

Table 11: Estimated relation between the local tax rate and the per capita income

	Coefficient	Std. Err.	t	P < |t|
Constant	4.93	0.21	23.87	0.00
Per capita income	-0.01	0.00	-10.64	0.00

n=589, R2=0.16

If per capita income is excluded from the regression, the negative local tax rate coefficient becomes significant (see table below). In our opinion, however, this coefficient is biased.

Table 12 : Estimated relation between the migration balance and some variables, ignoring the per capita income

	Coefficient	Std. Err.	t	P < |t|
Constant	-19.13	4.98	-3.84	0.00
Employment	0.25	0.06	4.14	0.00
Quality of administration	0.14	0.03	5.48	0.00
Beach	6.28	1.59	3.94	0.00
Privates services quality (factor 1)	-1.66	0.26	-6.29	0.00
Road quality (factor 2)	-1.73	0.28	-6.29	0.00
Charming environment (factor 3)	1.21	0.23	5.23	0.00
Housing price	-0.003	0.00	-4.11	0.00
Local tax rate	**-1.22**	**0.28**	**-4.37**	**0.00**

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